DOCUMENT RESUME

ED 203 094 CE 029 153

AUTHOR Long, Diana
TITLE Nursery and Greenhouse Worker. Teacher's Guide. Competency Based Education Curriculum.
INSTITUTION Radio Corp. of America, Dallas, Tex. Education Services.
SPONS AGENCY West Virginia State Dept. of Education, Charleston. Bureau of Vocational, Technical, and Adult Education.; West Virginia State Vocational Curriculum Lab., Cedar Lakes.
PUB DATE Dec 79
NOTE 58p.; For related documents see CE 029 150-152.
AVAILABLE FROM Vocational Curriculum Laboratory, Cedar Lakes Conference Center, Ripley, WV 25271.

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS *Agricultural Education; Behavioral Objectives; Competency Based Education; *Greenhouses; *Horticulture; *Job Skills; Nurseries (Horticulture); *Nursery Workers (Horticulture); Occupational Information; Plant Propagation; Student Evaluation; Teaching Guides; *Vocational Education

ABSTRACT

This instructor's guide accompanies the secondary-level, competency-based student material for Nursery and Greenhouse Worker available separately--see note. It is intended for use as a reference and aid in implementing the curriculum in a vocational agriculture program. These sections are included: identification and validation of job titles and competencies, listing of modules and competencies included in the curriculum, bibliography or resources, and equipment list. An implementation guide summarizes each competency sheet (found in the student materials) as to equipment needed, instructor's responsibilities, and a summary and/or answers to the criterion evaluation. Sample grade cards are provided. (YLB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED203094

Teacher's Guide

NURSERY AND GREENHOUSE WORKER

Competency Based Education Curriculum

Prepared by:
Diana Long
RCA Education Service

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

R. Thomas

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Produced at:
The West Virginia
Vocational Curriculum Laboratory

by

Fred W. Harrington
Curriculum Coordinator

Stanley E. Hopkins
Curriculum Specialist

Thomas P. Tourman
Production Manager

Macel R. Osborne
Secretary

CE 029 153

This material was developed by RCA Education Service through the cooperation and support of the Bureau of Vocational, Technical and Adult Education, West Virginia Department of Education, Charleston, West Virginia.

December 1979

WEST VIRGINIA BOARD OF EDUCATION

EXECUTIVE OFFICES

Charleston, West Virginia 25305

Mrs. Mary Martha Merritt, President
Beckley, 1983

Mr. William M. Smith, Vice President
Follansbee, 1982

Mr. James P. Clark, Secretary
St. Albans, 1986

Mr. Duke A. McDaniel, Member
Petersburg, 1987

Mr. Paul J. Morris, Member
Dunbar, 1980

Mr. Bob E. Myers, Member
Huntington, 1985

Dr. Carl J. Roncaglione, Member
Charleston, 1981

Dr. Charles H. Wagoner, Member
Weston, 1984

Mr. Fountie N. Williams, Member
Clarksburg, 1979

EX OFFICIO MEMBER
Dr. Roy Truby
Superintendent
West Virginia Department of Education

EX OFFICIO MEMBER
Dr. Ben L. Morton
Chancellor
West Virginia Board of Regents

VOCATIONAL EDUCATION PROGRAMS ARE AVAILABLE WITHOUT REGARD TO RACE, COLOR, NATIONAL ORIGIN, SEX OR HANDICAP.

PREFACE

It is with great pleasure that we bring you another West Virginia competency based education (CBE) curriculum. This Nursery and Greenhouse Worker curriculum was developed for West Virginia under contract, by RCA Education Service. The effort was coordinated by staff of the Bureau of Vocational, Technical and Adult Education.

The Bureau began advocating competency based education in 1974. Since that time West Virginia has produced over 25 CBE curricula in various occupational areas. We also have a number of CBE curricula currently in the process of being developed and/or fieldtested.

This Nursery and Greenhouse Worker curriculum was inserviced and disseminated to West Virginia vocational agriculture teachers at regional meetings during the spring of 1980. Additional copies of this curriculum are available from the:

Vocational Curriculum Laboratory
Cedar Lakes Conference Center
Ripley, West Virginia 25271
Telephone: 1-800-642-2670

I trust this material will be of assistance in your program. Any suggestions you may have for improving this curriculum may be sent to our State Curriculum Lab. Through this feedback we plan to continually update and revise our materials.

VOCATIONAL, TECHNICAL AND ADULT EDUCATION

Clarence E. Burdette

Clarence E. Burdette
Assistant State Superintendent of Schools

ACKNOWLEDGEMENTS

The following businesses and individuals were very helpful in the development of this CBE curriculum:

Businesses

Culloden Nursery and Landscaping, Culloden, WV

Shady Side Landscaping, St. Albans, WV

Price Bros. and Sons, Inc., Beckley, WV

Stadler Greenhouses, Nitro, WV

Price Landscaping Service & Garden Center, Charleston, WV

Conners Greenhouses, Charleston, WV

Ohio Valley Tuff Farms, Inc., Parkersburg, WV

Individuals

Ronald King, Barboursville High School

Leroy Mosley, Carver Career Center

James Doughtery, James Rumsey Vocational-Technical Center

Robert Beard, Parkersburg South High School

Lloyd Earnest, Cameron High School

Paul Lovett, Taylor County Vocational-Technical Center

John Aylor, Wardensville, WV

Mike Yokum, Circleville High School

Virgil Wilkins, Hundred High School

Harold Skidmore II, Calhoun County High School

Purpose of the

NURSERY AND GREENHOUSE WORKER

Competency Based Education Curriculum

This competency based education (CBE) curriculum, with Teacher's Guide, has been developed so that you may adapt any or all of its contents to accommodate your teaching style.

The purpose of this CBE curriculum is to provide you and your advisory committee with a set of West Virginia-validated Nursery and Greenhouse Worker Tasks, along with (1) the Steps needed to perform each task, (2) the Evaluation Standards, and (3) suggested Learning Activities.

Depending on your teaching style, you may want to use this material primarily to assist you in your own teaching plans, or the material has been developed in enough detail so that it may, with proper supervision, be used by your students.

How you use this CBE curriculum is up to you. It has been based on the best Horticultural information and material available in 1978-79 in West Virginia and the United States.

TABLE OF CONTENTS

Preface II

Acknowledgements III

Purpose of Curriculum IV

I. Introduction 1

II. Identification and Validation of Job Titles and Competencies 2

III. Functions of Developmental Committee 3

IV. Program Organization 4

V. Bibliography of Resources 7

VI. Equipment List 10

VII. Implementation of Curriculum 11

Grade Cards 48

INSTRUCTOR'S GUIDE - NURSERY AND GREENHOUSE WORKER

I. Introduction

The Bureau of Vocational, Technical and Adult Education, State Department of Education supports the concept of Competency Based Education because it is based upon occupational relevancy and can account for skills required by an individual to perform on the job. CBE is based on mastery learning principles and requires demonstration of skill and thus can ensure that critical skills required of the entry-level worker are included and attained in training. CBE allows for individual progress, and thus can provide employable skills for some students after short periods of training and can also lead to preparation for advanced jobs.

This instructor's guide is to be used as a reference for instructors and an aid in implementing the curriculum in their program. The following sections are included in the guide:

Preface
Acknowledgements
Purpose of Curriculum
I. Introduction
II. Identification and Validation of Job Titles and Competencies
III. Functions of the Developmental Committee
IV. Program Organization
V. Bibliography of Resources
VI. Equipment List
VII. Implementation of Curriculum
Grade Cards

II. Identification and Validation of Job Titles and Competencies

The competencies for this program are based upon three V-TECS catalogs: Gardening, Turf Management and Nursery Production. After a review of the DOT, the following job titles were noted as complying with the competencies selected for curriculum development.

Greenhouse Laborer	405.687 - 014
Greenhouse Worker	405.687 - 014
Nursery Laborer	405.687 - 014

The tasks listed in each catalog were reviewed, cross referenced and validated through a mail survey to agribusiness instructors under the Bureau of Vocational, Technical and Adult Education and on site interviews of 15 workers; five supervisors from five different employment locations. The surveys were tabulated and any tasks that were performed by less than 40% of the workers were dropped.

III. Functions of the Developmental Committee

The developmental committee was established to guide the development of the curriculum. The Committee consisted of Dr. Fred Harrington, State Curriculum Supervisor; Don Michaels, State Agriculture Supervisor and Bill West, Program Specialist, Agriculture.

The Committee met on several occasions for the following purposes.

1. Establish curriculum format and clarify project objectives.
2. Review major job titles and competencies.
3. Review survey results.
4. Finalize competency list.
5. Review student materials.

IV. Program Organization: Nursery and Greenhouse Workers

The following is a listing of the modules and competencies included in the curriculum.

MODULE 01	Occupational Knowledge
COMPETENCY STATEMENT 01	Describe duties common to nursery/greenhouse workers.
COMPETENCY STATEMENT 02	Describe working conditions common to nursery/greenhouse workers.
COMPETENCY STATEMENT 03	Describe educational and technical requirements for nursery/greenhouse workers.
COMPETENCY STATEMENT 04	Describe the economic outlook for nursery/greenhouse workers for the next 10 years.
MODULE 02	Soil Preparation
COMPETENCY STATEMENT 01	Fumigate soil to be used in soil mixture.
COMPETENCY STATEMENT 02	Prepare soil mixtures for growing plants.
MODULE 03	Seeds
COMPETENCY STATEMENT 01	Clean podded seeds and fleshy seeds.
COMPETENCY STATEMENT 02	Plant seeds in flats, packs, pots, or trays.
COMPETENCY STATEMENT 03	Transplant seedlings.
COMPETENCY STATEMENT 04	Harvest seeds from mature plants.
MODULE 04	Rooting and Propagation
COMPETENCY STATEMENT 01	Take cuttings from softwood and evergreen hardwood.

MODULE 04	Rooting and Propagation
COMPETENCY STATEMENT 02	Stick hardwood cuttings for rooting, including applying root hormone.
COMPETENCY STATEMENT 03	Sticking softwood cuttings for rooting, including applying root hormone.
COMPETENCY STATEMENT 04	Propagate ornamental plants by layering.
COMPETENCY STATEMENT 05	Propagate plants through grafting.
COMPETENCY STATEMENT 06	Propagate plants through budding.
MODULE 05	Container Plants
COMPETENCY STATEMENT 01	Identify containers used in nurseries.
COMPETENCY STATEMENT 02	Plant trees and shrubs in containers.
COMPETENCY STATEMENT 03	Protect container plants from the weather.
MODULE 06	
COMPETENCY STATEMENT 01	Transplant seedlings to pots.
COMPETENCY STATEMENT 02	Plant and transplant bulbs.
MODULE 07	Fertilizer
COMPETENCY STATEMENT 01	Apply fertilizer to nursery stock in containers and in field.
COMPETENCY STATEMENT 02	Apply liquid fertilizer using fertilizer injection system in greenhouse.
COMPETENCY STATEMENT 03	Clean hand sprayers and dusters.

MODULE 08	Greenhouse Control
COMPETENCY STATEMENT 01	Set, operate, shut down, and clean automatic watering system in greenhouse including extension system.
COMPETENCY STATEMENT 02	Set, operate, shut down and clean thermostatically controlled heat and light system in greenhouse.
MODULE 09	Disease and Pest Control
COMPETENCY STATEMENT 01	Identify diseased plants and plants damaged by insects and/or other animal pests.
COMPETENCY STATEMENT 02	Prepare insecticide, herbicide, and fungicide for application.
COMPETENCY STATEMENT 03	Control weeds in nursery stock in container and in field by hand cultivation and hand weeding.
MODULE 10	Sale Preparation
COMPETENCY STATEMENT 01	Dig shrubs and trees, including ball, burlap and bare root methods.
COMPETENCY STATEMENT 02	Pot plants from flats, trays or beds.
COMPETENCY STATEMENT 03	Grade harvested plants and label by common names.
COMPETENCY STATEMENT 04	Prepare plants and shrubs for shipment.
MODULE 11	Special Duties
COMPETENCY STATEMENT 01	Force potted plants to bloom in season.
COMPETENCY STATEMENT 02	Interpret and maintain records for nursery and/or greenhouse.

V. Bibliography of Resources

The curriculum is based upon the following textbooks and materials. Loan copies of the textbooks, audio visuals and purchasing irformation are available from the Curriculum Laboratory at Cedar Lakes.

Laurie, Alex, The Greenhouse Worker: Ohio Agricultural Education Curriculum Materials Service; Columbus, Ohio 1979.

Urbanic, Charles E., The Nursery Worker Part I - Basic Plant and Soil Science; Ohio Agricultural Education Curriculum Materials Service; Columbus, Ohio; 1970.

Urbanic, Charles E., The Nursery Worker Part II - Nursery Practices; Ohio Agricultural Education Curriculum Materials Service; Columbus, Ohio; 1970.

Colvin, Thomas Grounds Keeping Equipment Volume I; American Association for Vocational Instructional Materials; Athens, Georgia 1974.

Hughes, Denise A. and Rice, Laura Williams, Growing Container Plants: A Guide to Production in the High School Greenhouse; Vocational Education Productions San Luis Obispo, California; 1977.

Williams, Robert D. and Hanks, Sidney H., Hardwood Nurseryman's Guide; U. S. Department of Agriculture, Forest Survey, 1976.

Nelson, Kennard S., Flower and Plant Production in the Greenhouse; The Interstate Printers and Publishers, Inc.; Danville, Illinois 1966.

Moore, Stanley B; Ornamental Horticulture as a Vocation; Mor-Mac Publishing Company, Inc., Fairborn, Ohio 1969.

Reiley, H. Edward and Shry, Carroll L. Jr.; Introductory Horticulture; Delmar Publishers Albany, New York 1979.

Bishop, Douglas; Chapman, Stephen and Carter, Lark, Working in Plant Science; Gregg Division McGraw-Hill Book Company 1978.

Bishop, Douglas; Chapman, Stephen and Carter, Lark, Working in Plant Science Activity Guide; Gregg Division McGraw-Hill Book Company 1978.

Kelly, McGhee and Lawrence, Ornamental Horticulture; College of Agriculture and Forestry Division of Resource Management, West Virginia University; Morgantown, West Virginia 1973.

"Harvesting and Planting Trees and Shrubs"

"Plant Propagation: Sexual"
"Lawn Maintenance"
"Lawn Establishment"
"Pruning"
"Plant Propagation: Asexual"

Holyohe, Vaughn, "Turfgrass Pest Control" Prepared for the purpose of Pesticide Certification; West Virginia Department of Agriculture, Charleston, WV.

U. S. Department of Agriculture, Lawn Diseases and How to Control Them Home Garden Bulletin No. 61, Superintendents of Documents, U. S. Government Printing Office, Washington, D. C. October 1977.

Cooperative Extension Service, Pest Information Service; West Virginia University, Morgantown, West Virginia 1977.

"Leaf Spot Helminthosporium"
"Dollar Spot"
"Slime Molds on Grass"
"Tips to Help Avoid Lawn Problems"
"Lawn Grass Brown Patch"
"Fading-Out of Lawns"

Cooperative Extension Service Landscape Facts, Ohio State University, Columbus, Ohio 1975.

"Thatch Removal in Lawns"
"Flag and Stripe Smut on Turf"
"Helminthosporium Leaf Spots"
"Combination Fertilizer and Pesticides
Use and Misuse in Lawns"

AUDIO - VISUALS

Filmstrip and Cassettes

Vocational Education Productions, California State Polytechnic College, San Luis Obispo, California.

"Techniques in Land Preparation"
Part 1 Seedbed Preparation
Part II Bed Maintenance
"Plant Identification Annuals, Perennials and House Plants"
"Fertilizing Ornamental Plants"

"Propagating Ornamental Plants"
"Growing Media for Ornamental Plants"
"The Elements of Pruning"
"Controlling Pests of Ornamental Plants"
"Lawns and Ground Covers"

American Association for Vocational Instructional Materials, Applying Pesticides: Management Application Safety, Athens Georgia 1976.

"Recognizing Pests and Pesticides"
"Selecting Pesticides"
"Handling Pesticides Safely"
"Type and Size of Sprayer to Use"
"Operating Sprayers"
"Applying Pesticides"

VI. Equipment List

Nursery and Greenhouse Worker

Shovels
Wheelbarrow
Rakes
Hoe
Axe or Hatchet
File
Wrenches
Hedge Shears
Ladder, extension
Lawn Sprinkler
Shear, Hedge
Posthole Digger
Weed and Grass Cutter
Fertilizer Applicator
Tractor
Rule or Tape
Hammer and Maul
Seed Applicator
Shear, Pruning
Saw, Pruning
Power Edger
Chain Saw
Herbicide Applicator
Pruning Knife
Rotary Tiller
Small Hand Cultivators and Hoes
Pesticide Applicator
Spading Forks
Belts, Slings, and Ropes
Jack
Disc
Shear, Lopping
Irrigation Equipment
Can Shears
Grader Blade
Pumps
Pole Pruner
Saw, Orchard
Plow
Lawn Roller

VII. Implementation of Curriculum

The following guide was developed to aid in conducting the program. Each competency sheet is summarized as to equipment needed, instructor's responsibilities, and a summary and/or answers to the Criterion Evaluation. The guide does not include regular instructor activities such as supervising students practice, or checking students practice.

MODULE 01 Occupational Knowledge

COMPETENCY STATEMENT 01 Describe duties common to nursery/greenhouse workers.

EQUIPMENT NEEDED None

TEXTBOOK Dictionary of Occupational Titles

INSTRUCTOR'S RESPONSIBILITIES

None

SUMMARY OF EVALUATION

Report, oral or written. If report is written, it must be neat and free of spelling errors.

MODULE 01 Occupational Knowledge

COMPETENCY STATEMENT 02 Describe working conditions common to nursery/ greenhouse workers.

EQUIPMENT NEEDED None

TEXTBOOK Introductory Horticulture

INSTRUCTOR'S RESPONSIBILITIES

Assume role for Evaluation.

SUMMARY OF EVALUATION

Role-playing. Students must receive a satisfactory rating on each item of the Student Checklist.

MODULE 01 Occupational Knowledge

COMPETENCY STATEMENT 03 Describe educational and technical requirements for nursery/greenhouse workers.

EQUIPMENT NEEDED None

TEXTBOOK None

INSTRUCTOR'S RESPONSIBILITIES

None

SUMMARY OF EVALUATION

Written report. The plan must be feasible and must be written neatly and correctly.

MODULE 01 — Occupational Knowledge

COMPETENCY STATEMENT 04 — Describe the economic outlook for nursery/greenhouse workers for the next 10 years.

EQUIPMENT NEEDED — None

TEXTBOOK — Introductory Horticulture

INSTRUCTOR'S RESPONSIBILITIES

None

SUMMARY OF EVALUATION

Report, oral or written. If written, the report must be neat and free from spelling errors.

MODULE 02 — Soil Preparation

COMPETENCY STATEMENT 01 — Fumigate soil to be used in soil mixtures.

EQUIPMENT NEEDED
Fumigants (Pressure Cylinders)
Plastic covering
Area of soil

TEXTBOOK — Ornamental Horticulture as a Vocation

INSTRUCTOR'S RESPONSIBILITIES

1. Lecture for Learning Activity 1.
2. Prepare a quiz for Learning Activity 1.
3. Lecture/demonstration for Learning Activity 4.
4. Lecture for Learning Activity 5.
5. Prepare a list of soil problems for Learning Activity 6.

SUMMARY OF EVALUATION

Selecting fumigant and fumigating area of soil. Students must receive a satisfactory rating on each item of the Student Checklist.

MODULE 02 — Soil Preparation

COMPETENCY STATEMENT 02 — Prepare soil mixtures for growing plants.

EQUIPMENT NEEDED
Filmstrip projector
Soil
Sand
Peat

TEXTBOOK
Filmstrip: "Growing Media for Ornamental Plants", Vocational Education Productions.
Introductory Horticulture

INSTRUCTOR'S RESPONSIBILITIES

1. Prepare study questions for Learning Activity 1.
2. Prepare a quiz for Learning Activity 2.

SUMMARY OF EVALUATION

Preparing soil mixtures without using references. Answers follow.

MODULE 03 Seeds

COMPETENCY STATEMENT 01 Clean podded seeds and fleshy seeds.

EQUIPMENT NEEDED Podded and fleshy seeds

TEXTBOOK Introductory Horticulture

INSTRUCTOR'S RESPONSIBILITIES

1. Prepare a quiz for Learning Activity 1.
2. Lecture/demonstration for Learning Activity 2.

SUMMARY OF EVALUATION

Separating and cleaning seeds without using references. Students must receive a satisfactory rating on each item of the Student Checklist.

MODULE 03 Seeds

COMPETENCY STATEMENT 02 Plant seeds in flats, packs, pots, or trays

EQUIPMENT NEEDED

Seeds
Soil
Peat
Sand
Flats
Packs
Pots
Trays
Cheesecloth
Watering equipment
Skew

TEXTBOOK Introductory Horticulture

INSTRUCTOR'S RESPONSIBILITIES

1. Lecture/demonstration for Learning Activity 2.
2. Prepare a quiz for Learning Activity 3.
3. Prepare a list of seeds for Learning Activity 6.

SUMMARY OF EVALUATION

Planting seeds at recommended depth and at recommended time.

MODULE 03 Seeds

COMPETENCY STATEMENT 03 Transplant Seedlings

EQUIPMENT NEEDED

Pots
Flats
Soil
Seedlings
Watering equipment

TEXTBOOK Ornamental Horticulture

INSTRUCTOR'S RESPONSIBILITIES

Lecture/demonstration for Learning Activity 3.

SUMMARY OF EVALUATION

Transplanting seedlings to pots. The plant must not be wilted 24 hours later.

MODULE 03 — Seeds

COMPETENCY STATEMENT 04 — Harvest seeds from mature plants.

EQUIPMENT NEEDED
Plants with mature seeds
Seed containers
Labels

TEXTBOOK — None

INSTRUCTOR'S RESPONSIBILITIES

1. Lecture for Learning Activity 1.
2. Prepare a quiz for Learning Activity 1.

SUMMARY OF EVALUATION

Harvesting seeds without damage to seeds. Seeds must be labeled correctly.

MODULE 04 — Rooting and Propagation

COMPETENCY STATEMENT 01 — Take cuttings from softwood and evergreen hardwood.

EQUIPMENT NEEDED — Stock plants
Knives

TEXTBOOK — Introductory Horticulture

INSTRUCTOR'S RESPONSIBILITIES

1. Lecture/demonstration for Learning Activity 2.
2. Lecture/demonstration for Learning Activity 4.
3. Prepare a quiz for Learning Activity 4.

SUMMARY OF EVALUATION

Taking cuttings without using references. The cuts must be at a 45° angle and must be taken from current terminal wood.

MODULE 04 — Rooting and Propagation

COMPETENCY STATEMENT 02 — Stick hardwood cuttings for rooting, including applying root hormone.

EQUIPMENT NEEDED

Rooting media
Hardwood cuttings
Rooting hormones
Watering equipment

TEXTBOOK — Introductory Horticulture

INSTRUCTOR'S RESPONSIBILITIES

1. Lecture/demonstration for Learning Activity 4.
2. Prepare a quiz for Learning Activity 4.

SUMMARY OF EVALUATION

Rooting cuttings. The cuttings must be planted deep enough so that only one bud shows and they should be 6 to 8 inches apart

MODULE 04 — Rooting and Propagation

COMPETENCY STATEMENT 03 — Sticking softwood cuttings for rooting, including applying root hormone.

EQUIPMENT NEEDED
Rooting media
Softwood cuttings
Root hormone

TEXTBOOK — Introductory Horticulture

INSTRUCTOR'S RESPONSIBILITIES

Lecture/demonstration for Learning Activity 4.

SUMMARY OF EVALUATION

Rooting softwood cuttings. The lower ½ inch of leaves must be removed. The base of the cutting must be dipped in hormone and stuck 1/3 of its length in the rooting media. The cuttings must be spaced so that the leaves barely overlap.

MODULE 04 — Rooting and Propagation

COMPETENCY STATEMENT 04 — Propagate ornamental plants by layering.

EQUIPMENT NEEDED

Stock plants
Peat moss
Rooting hormone
Plastic
Knife

TEXTBOOK — Introductory Horticulture

INSTRUCTOR'S RESPONSIBILITIES

1. Lecture/demonstration for Learning Activity 4.
2. Prepare a quiz for Learning Activity 4.

SUMMARY OF EVALUATION

Air (girdle and cleft cuts) and tip layering. The plant must develop strong roots after the proper time. Students may not use references.

MODULE 04 — Rooting and Propagation

COMPETENCY STATEMENT 05 — Propagate plants through grafting.

EQUIPMENT NEEDED

Rootstock and scion wood
Hammer
Knife
Cleft grafting tool/wedge
Tying material
Grafting wax
Wilt-proofing material/polyethylene

TEXTBOOK — Introductory Horticulture

INSTRUCTOR'S RESPONSIBILITIES

1. Lecture/demonstration for Learning Activity 3.
2. Prepare a quiz for Learning Activity 3.
3. Lecture/demonstration for Learning Activity 8.
4. Prepare a quiz for Learning Activity 8.
5. Lecture/demonstration for Learning Activity 11.
6. Prepare a quiz for Learning Activity 11.

SUMMARY OF EVALUATION

Selecting best method and grafting scion and root section without using references. Students must score a satisfactory rating on each item of the Student Checklist.

MODULE 04 — Rooting and Propagation

COMPETENCY STATEMENT 06 — Propagate plants through budding.

EQUIPMENT NEEDED
Bud wood
Root stock
Budding knife
Rubber bud ties

TEXTBOOK — Introductory Horticulture

INSTRUCTOR'S RESPONSIBILITIES

1. Lecture/demonstration for Learning Activity 3.
2. Prepare a quiz for Learning Activity 3.

SUMMARY OF EVALUATION

Propagating 5 plants by T-budding. Students must receive a satisfactory rating on each item of the Student Checklist.

MODULE 05 Container Plants

COMPETENCY STATEMENT 01 Identify containers used in nurseries

EQUIPMENT NEEDED
Lumber for building flats
Hammer
Newspaper
Nails

TEXTBOOK Introductory Horticulture

INSTRUCTOR'S RESPONSIBILITIES

None

SUMMARY OF EVALUATION

Report, oral or written. Students may not use references.

MODULE 05 — Container Plants

COMPETENCY STATEMENT 02 — Plant trees and shrubs in containers.

EQUIPMENT NEEDED

Seedlings
Containers
Planting Media
Shovel
Watering equipment

TEXTBOOK

Introductory Horticulture
Ornamental Horticulture: Harvesting and Planting Trees and Shrubs

INSTRUCTOR'S RESPONSIBILITIES

None

SUMMARY OF EVALUATION

Transplanting a tree or shrub. Students must receive a satisfactory rating on each item of the Student Checklist.

MODULE 05 Container Plants

COMPETENCY STATEMENT 03 Protect container plants from the weather.

EQUIPMENT NEEDED
Tree wrap
Yard stick
Cloth
Lumber
Container plants

TEXTBOOK None

INSTRUCTOR'S RESPONSIBILITIES

1. Lecture/demonstration for Learning Activity 1.
2. Lecture/demonstration for Learning Activity 2.
3. Lecture/demonstration for Learning Activity 3.

SUMMARY OF EVALUATION

Preparing container plant for protection from weather. Students must receive a satiafactory rating on each item of the Student Checklist.

MODULE 06 Transplanting

COMPETENCY STATEMENT 01 Transplant seedlings to pots.

EQUIPMENT NEEDED
Pots
Planting media
Seedlings

TEXTBOOK Ornamental Horticulture

INSTRUCTOR'S RESPONSIBILITIES

Lecture/demonstration for Learning Activity 3.

SUMMARY OF EVALUATION

Transplanting seedlings to pots. The plant must not be wilted when observed 24 hours later.

MODULE 06 Transplanting

COMPETENCY STATEMENT 02 Plant and transplant bulbs.

EQUIPMENT NEEDED
Pots
Bulb bed
Planting media
Bulb planter
Spade
Fertilizer
Bulbs

TEXTBOOK Introductory Horticulture

INSTRUCTOR'S RESPONSIBILITIES

1. Lecture/demonstration for Learning Activity 5.
2. Prepare a quiz for Learning Activity 5.

SUMMARY OF EVALUATION

Planting or transplanting bulbs.

MODULE 07 — Fertilizer

COMPETENCY STATEMENT 01 — Apply fertilizer to nursery stock in containers and in field.

EQUIPMENT NEEDED
Filmstrip projector
Plants fertilizer
Shovel
Plastic bags
Soil testing forms

TEXTBOOK
Filmstrip: "Fertilizing Ornamental Plants", Vocational Education Productions
Introductory Horticulture
The Nursery Worker Part I

INSTRUCTOR'S RESPONSIBILITIES

1. Prepare questions for Learning Activity 1.
2. Prepare a quiz for Learning Activity 2.
3. Arrange for lecture by County Agent for Learning Activity 4.

SUMMARY OF EVALUATION

Taking soil sample, interpreting report, fertilizing plants. Students may use references. Soil must meet standard requirements 48 hours after fertilization.

MODULE 07 — Fertilizer

COMPETENCY STATEMENT 02 — Apply liquid fertilizer using fertilizer injection system in green house.

EQUIPMENT NEEDED
Liquid fertilizer
Injector
Filmstrip projector

TEXTBOOK
Filmstrip: "Fertilizing Ornamental Plants", Vocational Education Productions
The Green House Worker

INSTRUCTOR'S RESPONSIBILITIES

1. Prepare questions for Learning Activity 1.
2. Lecture/demonstration for Learning Activity 4.
3. Prepare a quiz for Learning Activity 4.

SUMMARY OF EVALUATION

Fertilizing plants with liquid injection system. References may be used. Students must receive a satisfactory rating on each item of the Student Checklist.

MODULE 07 — Fertilizer

COMPETENCY STATEMENT 03 — Clean hand sprayers and dusters.

EQUIPMENT NEEDED

Hand sprayer
Power sprayer
Duster
Seeder
Safety clothing
Safety equipment
Water hose
Oil

TEXTBOOK — Applying Pesticides: Management Application Safety

INSTRUCTOR'S RESPONSIBILITIES

1. Lecture/demonstration for Learning Activity 2.
2. Prepare a quiz for Learning Activity 2.
3. Lecture/demonstration for Learning Activity 3.

SUMMARY OF EVALUATION

Cleaning and storing equipment. Students must receive satisfactory rating on each item of the Student Checklist. References may be used.

MODULE 08 Greenhouse Control

COMPETENCY STATEMENT 01 Set, operate, shut down, and clean automatic watering system in greenhouse including extension system.

EQUIPMENT NEEDED Automatic watering system
Tensiometer

TEXTBOOK The Green House Worker

INSTRUCTOR'S RESPONSIBILITIES

1. Lecture/demonstration for Learning Activity 2.
2. Prepare a quiz for Learning Activity 2.
3. Lecture/demonstration for Learning Activity 3.
4. Prepare a quiz for Learning Activity 3.
5. Lecture/demonstration for Learning Activity 5.

SUMMARY OF EVALUATION

Watering area of plants with automatic watering system. Manufacturer's manual may be used. Plants must receive the amount of water required.

MODULE 08 — Greenhouse Control

COMPETENCY STATEMENT 02 — Set, operate, shut down and clean thermostatically controlled heat and light system in greenhouse.

EQUIPMENT NEEDED
Thermostatically controlled heat and light system
Thermometer
Shading compound
Moisture pads

TEXTBOOK — The Green House Worker

INSTRUCTOR'S RESPONSIBILITIES

1. Prepare a quiz for learning Activity 2.
2. Lecture/demonstration for Learning Activity 4.
3. Lecture/demonstration for Learning Activity 6.

SUMMARY OF EVALUATION

Maintaining constant temperature within $\pm$ 2° without using references, including maintenance if necessary.

MODULE 09 — Disease and Pest Control

COMPETENCY STATEMENT 01 — Identify diseased plants and plants damaged by insects and/or other animal pests.

EQUIPMENT NEEDED — Damaged plants

TEXTBOOK — Ornamental Horticulture as a Vocation
The Green House Worker
The Nursery Worker Part II

INSTRUCTOR'S RESPONSIBILITIES

Identifying disease or animal pest on group of damaged plants with 100% accuracy. References may be used.

MODULE 09 — Disease and Pest Control

COMPETENCY STATEMENT 02 — Prepare insecticide, herbicide, and fungicide for application.

EQUIPMENT NEEDED
Filmstrip projector
Pesticides
Sprayers

TEXTBOOK
Filmstrip: "Selecting Pesticides, American Association for Vocational Instructional Materials
Applying Pesticides: Management Application Safety
Applying Pesticides: Student Workbook
Filmstrip: "Handling Pesticides Safely", AAVIM

INSTRUCTOR'S RESPONSIBILITIES

1. Arrange for lecture by representative of the Environmental Protection gency for Learning Activity 2.
2. Prepare a quiz for Learning Activity 4.

SUMMARY OF EVALUATION

Mixing pesticides.

MODULE 09 — Disease and Pest Control

COMPETENCY STATEMENT 03 — Control weeds in nursery stock in container and in field by hand cultivation and hand weeding.

EQUIPMENT NEEDED — Hoe
Rake

TEXTBOOK — None

INSTRUCTOR'S RESPONSIBILITIES

None

SUMMARY OF EVALUATION

Weeding a field. The topsoil must be left smooth.

MODULE 10 — Sale Preparation

COMPETENCY STATEMENT 01 — Dig shrubs and trees, including ball, burlap and bare root methods.

EQUIPMENT NEEDED

Trees (planted)
Shrubs (planted)
Shovel
Burlap
Tree Stakes
Tree wrap
#9 wire
Small sections of garden hose
or leather rope
Watering equipment
Sledge hammer
Wrapping

TEXTBOOK — Ornamental Horticulture: Harvesting and Planting Trees and Shrubs

INSTRUCTOR'S RESPONSIBILITIES

1. Lecture for Learning Activity 1.
2. Prepare a quiz for Learning Activity 1.

SUMMARY OF EVALUATION

Transplanting a tree or shrub. Students must receive a satisfactory rating on each item of the Student Checklist.

MODULE 10 Sale Preparation

COMPETENCY STATEMENT 02 Pot plants from flats, trays or beds.

EQUIPMENT NEEDED
Pots
Flats
Soil
Seedlings
Watering equipment

TEXTBOOK Ornamental Horticulture

INSTRUCTOR'S RESPONSIBILITIES

Lecture/demonstration for Learning Activity 3.

SUMMARY OF EVALUATION

Transplanting seedlings to pots. The plant must not be wilted 24 hours later.

MODULE 10 Sale Preparation

COMPETENCY STATEMENT 03 Grade harvested plants and label by common names.

EQUIPMENT NEEDED
Plants
Labels
Markers
Calipers

TEXTBOOK U. S. A. Standard for Nursery Stock

INSTRUCTOR'S RESPONSIBILITIES

1. Lecture/demonstration for Learning Activity 1.
2. Demonstration for Learning Activity 4.

SUMMARY OF EVALUATION

Grading and labeling plants. The grade must agree with the U. S. A. Standard for Nursery Stock. The label must be tied to a sturdy branch and printed with a waterproof marker.

MODULE 10 — Sale Preparation

COMPETENCY STATEMENT 04 — Prepare plants and shrubs for shipment.

EQUIPMENT NEEDED

Plants
String
Labels
Markers
Peat Moss
Saw dust
Wrapping paper
Cartons or crates

TEXTBOOK — The Nursery Worker Part II

INSTRUCTOR'S RESPONSIBILITIES

1. Lecture/demonstration for Learning Activity 2.
2. Lecture/demonstration for Learning Activity 4.
3. Lecture/demonstration for Learning Activity 5.

SUMMARY OF EVALUATION

Preparing plants for shipment. Students must receive a satisfactory rating on each item of the Student Checklist.

MODULE 11 Special Duties

COMPETENCY STATEMENT 01 Force potted plants to bloom in season.

EQUIPMENT NEEDED Plants suitable for forcing fertilizer.

TEXTBOOK The Green House Worker
Introductory Horticulture

INSTRUCTOR'S RESPONSIBILITIES

None

SUMMARY OF EVALUATION

Forcing plants to bloom. Plants must bloom as scheduled.

MODULE 11 Special Duties

COMPETENCY STATEMENT 02 Interpret and maintain records for nursery and/or greenhouse.

EQUIPMENT NEEDED Record forms

TEXTBOOK The Nursery Worker Part II

INSTRUCTOR'S RESPONSIBILITIES

None

SUMMARY OF EVALUATION

Keeping records of student time, sales and purchases for one week with 100% accuracy.

GRADE CARDS

STUDENT GRADE CARD

HORTICULTURE

NURSERY/GREENHOUSE

		1st Nine Weeks	2nd Nine Weeks	3rd Nine Weeks	4th Nine Weeks
MODULE 01	Occupational Knowledge				
COMPETENCY STATEMENT 01	Describe duties common to nursery/greenhouse workers. REMARKS:				
COMPETENCY STATEMENT 02	Describe working conditions common to nursery/greenhouse workers. REMARKS:				
COMPETENCY STATEMENT 03	Describe educational and technical requirements for nursery/greenhouse workers. REMARKS:				
COMPETENCY STATEMENT 04	Describe the economic outlook for nursery/greenhouse workers for the next 10 years. REMARKS:				
MODULE 02	Soil Preparation				
COMPETENCY STATEMENT 01	Fumigate soil to be used in soil mixture. REMARKS:				
COMPETENCY STATEMENT 02	Prepare soil mixtures for growing plants. REMARKS:				
MODULE 03	Seeds				
COMPETENCY STATEMENT 01	Clean podded seeds and fleshy seeds. REMARKS:				
COMPETENCY STATEMENT 02	Plant seeds in flats, packs, pots, or trays. REMARKS:				
COMPETENCY STATEMENT 03	Transplant seedlings REMARKS:				
COMPETENCY STATEMENT 04	Harvest seeds from mature plants. REMARKS:				

		1st Nine Weeks			2nd Nine Weeks			3rd Nine Weeks			4th Nine Weeks		
MODULE 04	Rooting and Propagation												
COMPETENCY STATEMENT 01	Take cuttings from softwood and evergreen hardwood. REMARKS:												
COMPETENCY STATEMENT 02	Stick hardwood cuttings for rooting, including applying root hormone. REMARKS:												
COMPETENCY STATEMENT 03	Sticking softwood cuttings for rooting, including applying root hormone. REMARKS:												
COMPETENCY STATEMENT 04	Propagate ornamental plants by layering. REMARKS:												
COMPETENCY STATEMENT 05	Propagate plants through grafting. REMARKS:												
COMPETENCY STATEMENT 06	Propagate plants through budding. REMARKS:												
MODULE 05	Container Plants												
COMPETENCY STATEMENT 01	Identify containers used in nurseries. REMARKS:												
COMPETENCY STATEMENT 02	Plant trees and shrubs in containers. REMARKS:												
COMPETENCY STATEMENT 03	Protect container plants from the weather. REMARKS:												
MODULE 06	Transplanting												
COMPETENCY STATEMENT 01	Transplant seedlings to pots. REMARKS:												
COMPETENCY STATEMENT 02	Plant and transplant bulbs. REMARKS:												

		1st Nine Weeks			2nd Nine Weeks			3rd Nine Weeks			4th Nine Weeks		
MODULE 07	Fertilizer												
COMPETENCY STATEMENT 01	Apply fertilizer to nursery stock in containers and in field. REMARKS:												
COMPETENCY STATEMENT 02	Apply liquid fertilizer using fertilizer injection system in green house. REMARKS:												
COMPETENCY STATEMENT 03	Clean hand sprayers and dusters. REMARKS:												
MODULE 08	Greenhouse Control												
COMPETENCY STATEMENT 01	Set, operate, shut down, and clean automatic watering system in green house including extension system. REMARKS:												
COMPETENCY STATEMENT 02	Set, operate, shut down and clean thermostatically controlled heat and light system in green house. REMARKS:												
MODULE 09	Disease and Pest Control												
COMPETENCY STATEMENT 01	Identify diseased plants and plants damaged by insects and/or other animal pests. REMARKS:												
COMPETENCY STATEMENT 02	Prepare insecticide, herbicide, and fungicide for application. REMARKS:												
COMPETENCY STATEMENT 03	Control weeds in nursery stock in container and in field by hand cultivation and hand weeding. REMARKS:												
MODULE 10	Sale Preparation												
COMPETENCY STATEMENT 01	Dig shrubs and trees, including ball, burlap and bare root methods. REMARKS:												

		1st Nine Weeks				2nd Nine Weeks				3rd Nine Weeks				4th Nine Weeks			
MODULE 10	Sale Preparation																
COMPETENCY STATEMENT 02	Pot plants from flats, trays or beds. REMARKS:																
COMPETENCY STATEMENT 03	Grade harvested plants and label by common names. REMARKS:																
COMPETENCY STATEMENT 04	Prepare plants and shrubs for shipment. REMARKS:																
MODULE 11	Special Duties																
COMPETENCY STATEMENT 01	Force potted plants to bloom in season. REMARKS:																
COMPETENCY STATEMENT 02	Interpret and maintain records for nursery and/or green house. REMARKS:																